# PEDESTRIAN AND BICYCLE MASTER PLAN

Public Meeting
April 15, 2013





### Items to Review Today

- Why is this important?
- Public input summary
- Plan Recommendations (by type)
- Barrier considerations
- Prioritization and recommendations





The Benefits of Bicycling and Walking to

Residents of Sugar Land





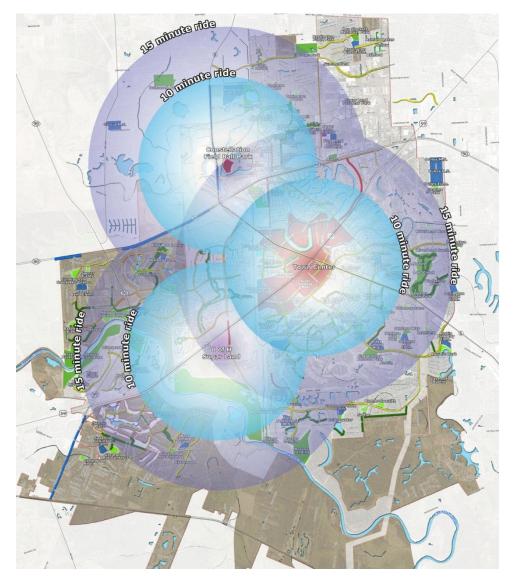








# How long does it take?







# Residents of Sugar Land support better bicycling facilities

- "Want bike lanes and more bike racks at stores, entertainment venues, the mall, etc."
- "I love to bicycle, but I want to be able to incorporate it into my lifestyle, I want to take my bicycle to the grocery store, to the movies, to a coffee shop or to take it to the bus stop for commuting."
- "I fully support a really state of the art bicycle route that connects our neighborhoods and that connects our parks SAFELY!
- "I am an avid cyclist and commute to work daily on bike."





### An Extensive Citizen Dialogue...

Multiple methodologies used (over 1,700 comments received to date):

- Citywide Open House, Constellation Field (60 + responses)
- Online survey (380 responses)
- CommunityWalk (online mapping exercise, over 1,100+ comments)
- 9 Stakeholder meetings (75+ representatives)
- Open house/Public Mtg. June 25 (54 attendees)
- Online Town Hall (41 comments)
- Citizen comments received (still ongoing)





### Stakeholders/Focus Groups

- Planning and Zoning Commission
- Public agencies
- Sugar Land school representatives
- Parks and Recreation Advisory Board
- Walk/Bike Interests
- Businesses and Economic Development
- Development Committee
- HOA groups
- Levee Improvement Districts





#### Goals of the Master Plan

- 1. Develop an exemplary network of facilities for walking and bicycling throughout Sugar Land that is actively utilized.
- 2. Incorporate the most current standards and best practices for safety, and provide facility options for all ages and skill levels.
- 3. Along major roadways in the City, emphasize off-street facilities, but if feasible, also provide on-street facilities for experienced riders.





#### Goals of the Master Plan

- **4.** Measurably increase the use of the network for both transportation and recreational uses as it is implemented.
- **5.** Provide a variety of off-street opportunities for all types of activities, both active and passive.
- 6. Maintain compatibility with adjacent private properties create trails that respect and preserve the rights of adjacent homeowners but that provide access to as many residents of the City as possible.





#### Goals of the Master Plan

- 7. Actively seek partnerships with other governmental entities, homeowner associations, private property owners and developers to expedite and enhance the creation of the network envisioned by this plan.
- 8. Identify ways in which to accelerate the development of the network, so that much of the system is in place within a decade.





# Proposed Facility Types





### Facility Selection Criteria

- Key route to link destinations
- Vehicular volume
- Speed
- Road width
- Traffic calming
- Other considerations
  - Cost/Timing





#### On Street Facilities

- Issues to consider
  - Connection opportunity for key destinations
    - Roadway has excess capacity
    - Low cost of implementation
    - Limited in where it is used
    - Where links origins, destinations
    - Preserve level of service for cars
  - Potential concern
    - Public perception of impacts to vehicular function





### **Prioritization Matrix**

#### **Feasibility**

- Corridor availability City owned?
- Potential impact on vehicular mobility?
- How easy will it be to construct?
- Impact on existing landscaping?
- Potential cost range?
- What was the level of citizen support or concern?

#### Benefits of the Segment being evaluated

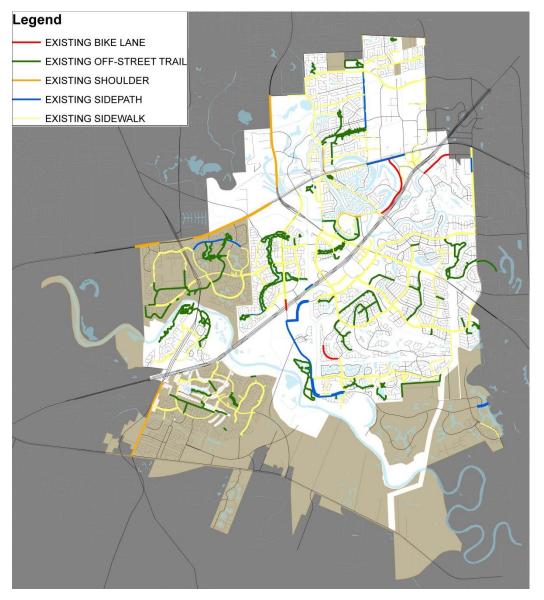
- Importance to citywide connectivity
- Helps overcome gap or barrier
- Connects to nearby destinations
- Helps address area with previous accidents
- Potential usage

Corridor Na	me:		Score:		
Type:			Length:		
	Evaluation Element	Percent of Overall	Score - Select One	Points	
FEASIBILITY					
1. Corridor Avai	lability	10%			
Majority of corrid	or available		3		
Available, require	s simple negotiation for use		2		
	x negotiation for use of corridor		1		
2. Impact on Vel	hicular Mobility	10%			
No or minimal pro	ojected impact on vehicular capacity or mobility		3		
After improvemen	nt, roadway capacity still exceeds 2x exist. ADT		2		
After improvemen	nt, roadway capacity is between 1.5 and 2x exist. ADT		1		
3. Constructabil	ity (Ease of Implementation)	5%			
Easy corridor to v	work in, very few constraints		1.5		
	orridor to work in, some constraints		1		
Constrained corr	idor, significant physical constraints		0.5		
4. Impact on Exi	sting Corridor Features	5%			
Impacts less than	1 5% of existing landscape/trees		1.5		
Impacts between	5 and 20% of existing landscape/trees		1		
May impact more	than 20% of existing landscape/trees		0.5		
5. Potential Imp	lementation Cost	10%			
Lowest 30th perc	entile by facility		3		
Between 30th an	d 70th percentile by facility		2		
Highest 30th pen	centile by facility		1		
6. Citizen Input	Regarding this Corridor	10%			
Positive support	received		3		
Neutral feedback	or no feedback at all		2		
Received citizen	concerns regarding corridor		1		
RENEFIT					
Importance to	Citywide Connectivity	10%			
Route with poten	tial to serve major areas of the City		3		
Can connect mul	tiple area neighborhoods		2		
Addresses gener	ally local neighborhood connectivity only		1		
2. Helps overco	me Barrier or Existing Gap	10%			
	ion across major barrier or closes existing gap		3		
	oute that crosses barrier		2		
Does not cross o	r link to any barrier crossing or close existing gap		1		
3. Connectivity	to Local Destinations	10%			
Connects to two	or more local destinations (school, park or				
neighborhood ce	nter)		3		
Connects to one	school park or local destination		2		
Doesn't connect	to any local destinations		1		
4. Route with Pr	ior Reported Bicycle or Pedestrian Incident	10%			
Accident with iniu	rry report in last three years with injury		3		
Man inium incide	et le leut there are an		2		





Existing
Facilities in
Sugar Land
Today

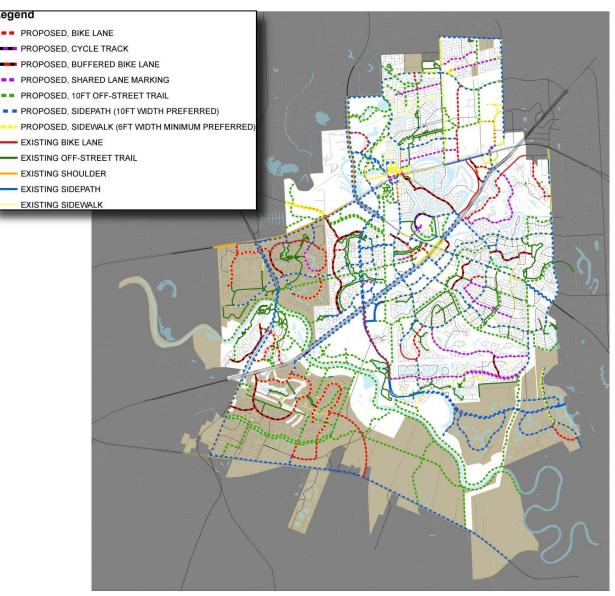






## 2013 Draft Plan

Legend







# SIDEPATH (ADJACENT TO ROADWAY)

Width: 8 ft. min. (10' minimum, 8' in constrained areas)
User: pedestrians & bicyclists



#### Where:

Streets with adequate parkway width

#### **Advantages:**

More appealing to novice or young riders, can connect areas w/o greenbelt corridors

**Disadvantages:** High cost, less appealing to experienced riders, less predictability at intersections

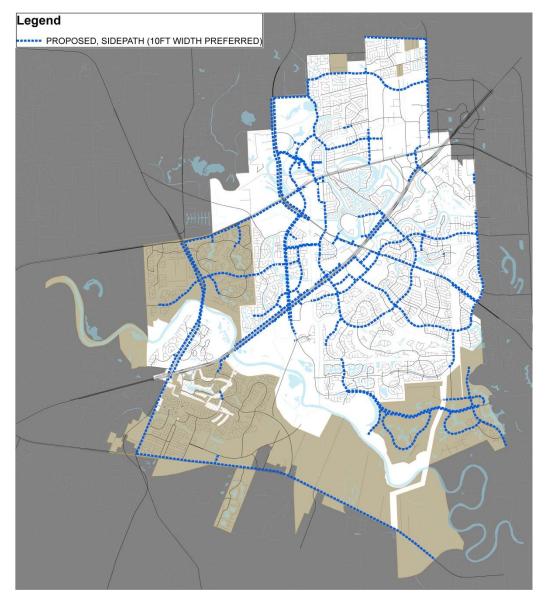
Cost:

High





### All Proposed Sidepaths







### **High Priority Sidepaths**

			Existing	Length
Name	From	То	Facility	(If)
AUSTIN PARKWAY	LEXINGTON BLVD	DITCH A	SIDEWALK	1,540
BROOKS ST	AZALEA	BRIDGE		2,160
BROOKS ST	US 90A	GUENTHER	SIDEWALK	790
BROOKS ST	BRIDGE	STATE HWY 6		1,030
BURNEY RD	WEST AIRPORT BLVD	SEVENTH ST / MAIN ST	SIDEWALK	8,640
CREEKBEND DRIVE	OYSTER COVE DR	SUGAR LAKES DR	SIDEWALK	2,510
DIARY ASHFORD RD	US 90A	US 59	SIDEWALK	1,490
ELKINS RD	SWEETWATER BLVD	COLONY CROSSING DR		3,600
FIRST COLONY BLVD	STATE HWY 6	COLONY LAKES DR	SIDEWALK	2,540
FLUOR DANIEL DR	LAKE POINT TRAIL	SOLDIERS FIELD DR	SIDEWALK	1,440
IMPERIAL DEVELOPMENT	STATE HWY 6	ULRICH ST		9,540
IMPERIAL DEVELOPMENT	IMPERIAL BLVD	NORTH OYSTER CREEK TRAIL		670
		IMPERIAL DEVELOPMENT		
IMPERIAL DEVELOPMENT	STADIUM DRIVE	SIDEPATH		530
LEXINGTON BLVD	SWEETWATER BLVD	STATE HWY 6	SIDEWALK	6,630
LEXINGTON BLVD	OXBOW DR	SWEETWATER BLVD	SIDEWALK	2,080
LEXINGTON BLVD	DITCH H	OXBOW DR		950
LOWE'S CONNECTION	US 59	SOLDIERS FIELD DR		280
MALL RING RD	TOWN CENTER BLVD	LEXINGTON BLVD		1,000
MATLAGE WAY	EXISTING SIDEPATH @ IPRC	BROOKS ST	SIDEWALK	1,920
MATLAGE WAY	GUENTHER	EXISTING SIDEPATH @ IPRC	SIDEWALK	400
MEADOWCROFT BLVD	DITCH H	FIRST COLONY BLVD		2,020
MEADOWCROFT BLVD	UNIVERSITY BLVD	DITCH H	SIDEWALK	2,670
SETTLERS WAY BLVD	LOST CREEK BLVD	EDGEWATER DR		330
STADIUM DRIVE	BURNEY RD	IMPERIAL BRIDGE		1,960
STADIUM DRIVE	IMPERIAL BRIDGE	IMPERIAL BLVD		1,180





#### High Priority Sidepaths (continued)

			Existing	
Name	From	То	Facility	Length (If)
STADIUM DRIVE	IMPERIAL BLVD	US 90A		4,050
STATE HWY 6	TOWN CENTER BLVD	DITCH E		1,410
SUGAR CREEK BLVD	US 59	COUNTRY CLUB BLVD		1,090
SUGAR LAKES DR NORTH	CREEK BEND DR	US 59	SIDEWALK	800
SUGAR LAKES DR SOUTH	CREEK BEND DR	US 59	SIDEWALK	780
SWEETWATER BLVD	LEXINGTON BLVD	DITCH A TRAIL	SIDEWALK	2,040
SWEETWATER BLVD	DITCH A TRAIL	PALM ROYALE BLVD	SIDEWALK	2,760
TOWN CENTER BLVD N	STATE HWY 6	MALL RING RD	SIDEWALK	1,720
ULRICH ST	AVENUE A	US 90A		1,240
ULRICH ST	US 90A	GUENTHER		300
UNIVERSITY BLVD	NORTH OF US 59	US 59		1,640
UNIVERSITY BLVD	NORTH OF US 59	US 59		1,440
UNIVERSITY BLVD	US 59	LEXINGTON BLVD		4,030
US 59	COMMERCE GREEN BLVD	DAIRY ASHFORD RD		2,070
US 90A	STATE HWY 6	IMPERIAL PARK		2,760
US 90A	ULRICH ST	BROOKS ST		790
VOSS RD	STATE HWY 6	BURNEY RD		3,840
WESCOTT AVE	PRESTWICK AVE	UNIVERSITY BLVD		2,300
WILLIAMS TRACE BLVD	FERRY LANDING	STATE HWY 6	SIDEWALK	2,380





SHARED-USE PATH Width: 8 ft. min. (10 ft. preferred) (OFF-STREET TRAIL) User: pedestrians & bicyclists

#### Where:

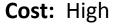
or greenbelt corridors

#### **Advantages:**

Drainage, utility Attractive for riders of many skill levels, can enhance connectivity citywide crossings

#### **Disadvantages:**

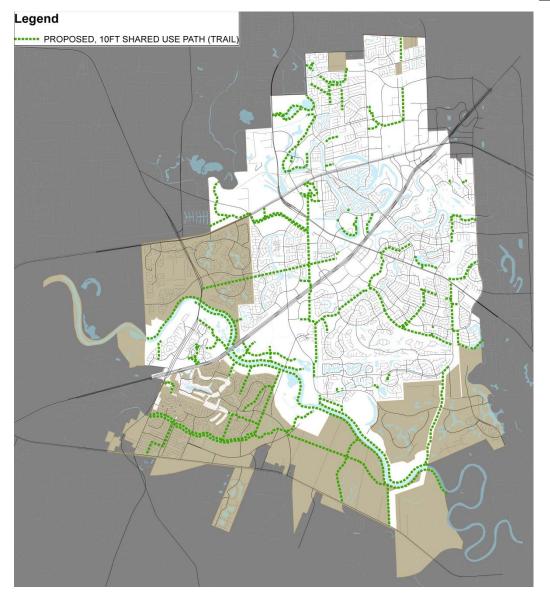
High cost, requires suitable corridor, concern at street







All
Proposed
Off-Street
Shared
Use Paths
(Trails)







#### High Priority Shared Use Paths (Trails)

Name	From	То	Length (If)
CLEMENTS HIGH SCHOOL	DITCH A TRAIL	ELKINS RD	1,710
COLONY GRANT TRAIL	MESQUITE PARK	SETTLERS WAY BLVD	1,880
COLONY GRANT TRAIL ADDITIONS	AUSTIN PARKWAY	DITCH A	1,000
DITCH A TRAIL CORRIDOR	AUSTIN PARKWAY	SWEETWATER BLVD	4,000
DITCH A TRAIL CORRIDOR	SWEETWATER BLVD	COMMONWEALTH BLVD	8,900
DITCH A TRAILS	DITCH H	SWEETWATER BLVD	3,080
DITCH H TRAILS	US 59	COMMONWEALTH BLVD	11,700
DITCH H TRAILS	STATE HWY 6	LEVEE 17 TRAIL CORRIDOR	1,300
DITCH H TRAILS	LEVEE 17 TRAIL CORRIDOR	US 59	5,920
DITCH H TRAILS	UNIVERSITY BLVD	STATE HWY 6	3,050
DITCH H TRAILS	UNIVERSITY BLVD	IMPERIAL PARK	1,110
ELDRIDGE PARK CONNECTION	ELDRIDGE PARK	WEST AIRPORT BLVD	390
FIRST ST	MAIN ST	WOOD ST	910
HIGHLAND AREA NEIGHBORHOOD			
TRAIL	LEXINGTON BLVD/STATE HWY 6	WILLIAMS TRACE BLVD	4,060
IMPERIAL PARK	US 90A	BROOKS ST	2,000
KENSINGTON TO MEADOW LAKE PARK CONNECTION	KENSINGTON DR	EXISTING TRAIL @ MEADOW LAKE PARK	410
LAKE POINTE TRAILS EXTENSION	CREEKBEND DR	WHIMBREL DR	430
LAKE POINTE TRAILS EXTENSION	LAKE POINTE TRAIL	CREEKBEND DR	210
		RETENTION PONDS IN RESERVE	
NORTH DETENTION POND TRAIL	WEST AIRPORT BLVD	AT GLEN LAUREL	1,560
POWERLINE TRAIL CORRIDOR	STATE HWY 6	AUSTIN PARKWAY	6,940
SETTLERS WAY BLVD DITCH TRAIL	MESQUITE DR	DITCH A TRAIL	320
SETTLERS WAY BLVD DITCH TRAIL	AUSTIN PARKWAY	EXISTING DITCH TRAIL	240
TELFAIR LAKE TRAILS (DITCH H)	WESCOTT AVE	DITCH H	1,090





#### **BIKE LANES**

Width: 5 ft. minimum **User: bicyclists** 







with lower traffic volumes and speeds

Where: Streets Advantages: Very inexpensive, easy to implement in many areas with no other option

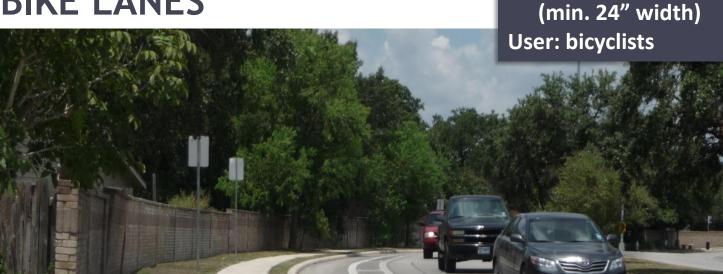
**Disadvantages:** Some riders may not be comfortable near cars

Cost: Very low





### **COMFORT or BUFFERED BIKE LANES**



Where: Street Advantages:

pavement width

with sufficient Very inexpensive, easy to implement, adds extra buffering from traffic, more appealing to many average riders

**Disadvantages:** 

Requires wider pavement width Cost:

Very low

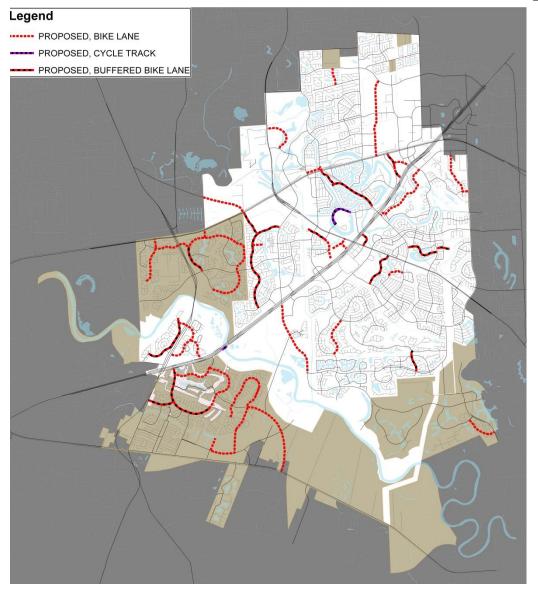




Width: 5 ft. minimum

plus striped buffer

All **Proposed** Bike Lanes and **Buffered** Bike Lanes







# High Priority Bike Lanes and Buffered Bike Lanes

Name	From	То	Length (If)	Recommended Facility	Further Action
ALCORN OAKS DR	SWEETWATER BLVD	ELKINS RD	4,380	BIKE LANE	LANE DIET
BAYVIEW DR	US 90A	SUGAR LAKES DR	2,050	BUFFERED BIKE LANE	ROAD DIET
CHATHAM AVE	EASTON AVE	TELFAIR AVE	9,000	BUFFERED BIKE LANE	LANE DIET
CHATHAM AVE	EASTON AVE	UNIVERSITY BLVD	2,380	BUFFERED BIKE LANE	LANE DIET
COMMERCE GREEN BLVD	FORT BEND CHAMBER OF COMMERCE	FORT BEND CHAMBER OF COMMERCE	380	BIKE LANE	ROAD DIET
COMMERCE GREEN BLVD	US 90A	SOUTH OF SUGAR CREEK CENTER BLVD	1,600	BUFFERED BIKE LANE	ROAD DIET
COMMERCE GREEN BLVD	SOUTH OF SUGAR CREEK CENTER BLVD	US 59	1,000	BUFFERED BIKE LANE	ROAD DIET
<b>COUNTRY CLUB BLVD</b>	SUGAR CREEK BLVD	WILLIAMS TRACE BLVD	7,840	BIKE LANE	LANE DIET
CREEKBEND DRIVE	FLUOR DANIEL DR	PRUDENTIAL CIR	3,450	CYCLE TRACK	ROAD DIET
EDGEWATER DR	WILLIAMS TRACE BLVD	SETTLERS WAY BLVD	3,820	BUFFERED BIKE LANE	ROAD DIET
GRANTS LAKE BLVD	STATE HWY 6	AUSTIN PARKWAY	4,100	BUFFERED BIKE LANE	LANE DIET
<b>HETHERINGTON AVE</b>	CHATHAM AVE	TELFAIR LAKES	1,090	BIKE LANE	LANE DIET
KEMPNER	ULRICH ST	MAIN ST	1,550	BIKE LANE	LANE DIET
KENSINGTON DR	STATE HWY 6	CUL-DE-SAC	1,780	BIKE LANE	LANE DIET
LAKESIDE PLAZA DR	KENSINGTON DR	US 59 / SOUTHWEST FREEWAY	800	BIKE LANE	LANE DIET
LOST CREEK BLVD	SETTLERS WAY BLVD	OYSTER CREEK PARK	1,370	BUFFERED BIKE LANE	ROAD DIET
MAIN ST	IMPERIAL BLVD	US 90A	560	BIKE LANE	LANE DIET
SOLDIERS FIELD	FLUOR DANIEL DR	SOLDIERS FIELD CT CUL- DE-SAC	2,330	BIKE LANE	LANE DIET





# High Priority Bike Lanes and Buffered Bike Lanes (continued)

Name	From	То	Length (If)	Recommended Facility	Further Action
SOLDIERS FIELD	FIRST COLONY BLVD	FLUOR DANIEL DR	2,180	BUFFERED BIKE LANE	LANE DIET
SUGAR CREEK	COMMERCE GREEN				
CENTER BLVD	BLVD	US 59	1,660	BIKE LANE	LANE DIET
SUGAR LAKES DR	OYSTER CREEK DR	CREEKBEND DR	5,350	BUFFERED BIKE LANE	ROAD DIET
<b>TOWN CENTER BLVD</b>					
N	STATE HWY 6	US 59	1,590	BUFFERED BIKE LANE	LANE DIET
					SHIFT SHOULDER
UNIVERSITY BLVD	US 59	COMMONWEALTH BLVD	8,220	BIKE LANE	TO OUTSIDE LANE
WIMBERLY CANYON					
DR	THISTLEROCK LN	INDIGO RIVER LN	6,350	BUFFERED BIKE LANE	LANE DIET







Where: Streets with appropriate volumes/speeds, and without pavement width for bicycles lanes

Advantages: Very inexpensive, easy to implement in many areas with no other option available

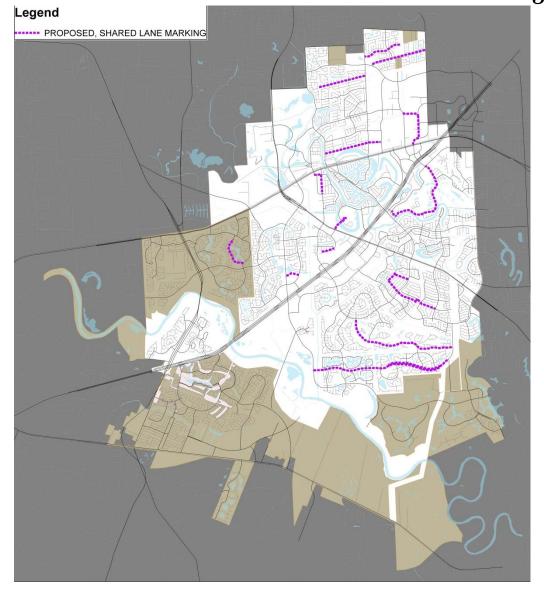
Disadvantages:
Some riders may not be comfortable near cars

Cost: Very low





### All Proposed Shared Lane Markings







### High Priority Shared Lane Markings

Name	From	То	Length (If)
BRANFORD PLACE	UNIVERSITY BLVD	WESCOTT AVE	1,450
BROOKS ST	GUENTHER	AZALEA/MATLAGE WAY	2,100
FLUOR DANIEL DR	CREEKBEND DR	OYSTER CREEK DR	1,260
GREEN FIELDS DR	PECAN RIDGE DR	SETTLERS WAY BLVD	2,380
GREENWAY DR	HANBURY CT	ELDRIDGE RD	5,190
GUENTHER	ULRICH ST	BROOKS ST	820
LAKEVIEW DR	MAIN ST	GILLINGHAM LN	6,240
PECAN RIDGE DR	PLANTERS ST	GREEN FIELDS DR	320
PLANTERS ST	WILLIAMS GRANT	PECAN RIDGE DR	3,900
SUGAR MILL DR	WILLIAMS GRANT	WILLIAMS TRACE BLVD	1,600
WILLIAMS GRANT	NORTH OF SUGAR MILL DR	PLANTERS ST	1,190





#### WAYFINDING SIGNS

- Comprehensive Wayfinding Program (2011)
- Maintain message consistency for vehicular and pedestrian systems



LEVEL 4 Small Directional





#### **SIDEWALK**

Width: 5 ft. min., 6' wide along major collectors and arterials
User: pedestrians



Where:
ROW not
available for a
sidepath,
mature trees
already exist

**Advantages:** Many sidewalks already in place by developers

**Disadvantages:** Unless widened, cannot accommodate multiple users, or bicyclists

**Cost:** Medium





# Potential Road Diets

(Replace a lane)\*

#### **CITY LIMITS**

EDGEWATER DR.

CREEKBEND DR. (PORTIONS ONLY)

KNIGHTSBRIDGE BLVD.

LOST CREEK BLVD.

SUGAR LAKES DR.

BAYVIEW DR.

COMMERCE GREEN BLVD.

WIMBERLY CANYON (PORTIONS

ONLY)

#### **ETJ LIMITS**

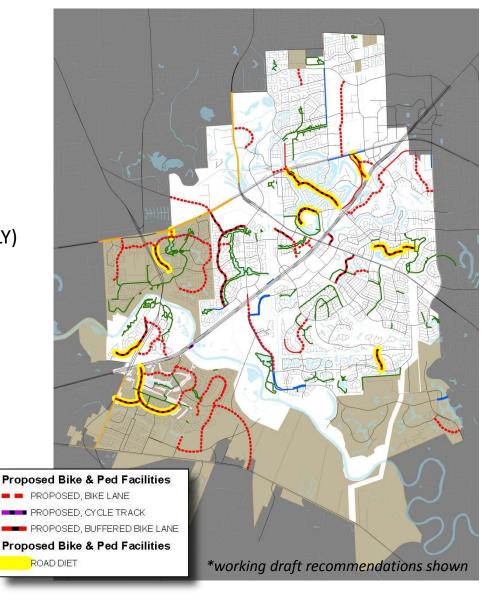
HOMEWARD WAY (PORTIONS ONLY)

GREATWOOD PARKWAY (PORTIONS
ONLY)

Proposed Bike & Ped Facilities
PROPOSED, BIKE LANE
PROPOSED, CYCLE TRACK
PROPOSED, BUFFERED BIKE LANI

SANSBURY LANE

**GATEWAY BLVD.** 







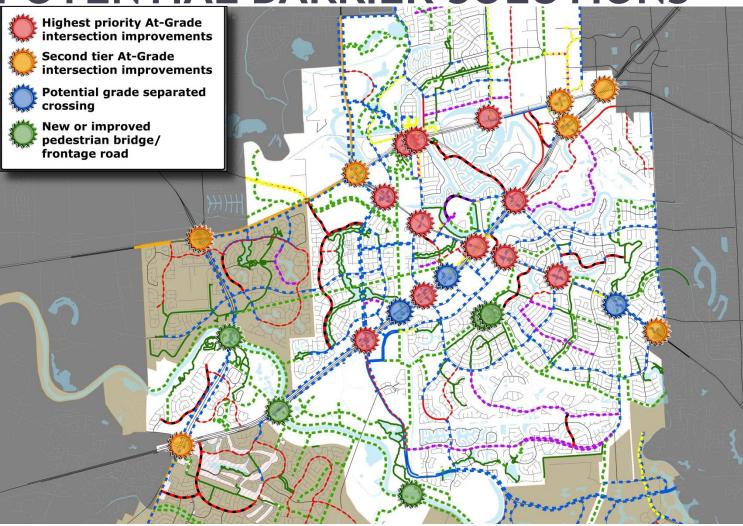
# TASK FORCE - BARRIERS SOLUTION

- Short Term
  - Crossing enhancements
  - Key crossings
  - Demonstrate demand over time
- Long term
  - Dependent on demonstrated demand
  - Ped/bike bridge over US 59 and SH 6





POTENTIAL BARRIER SOLUTIONS







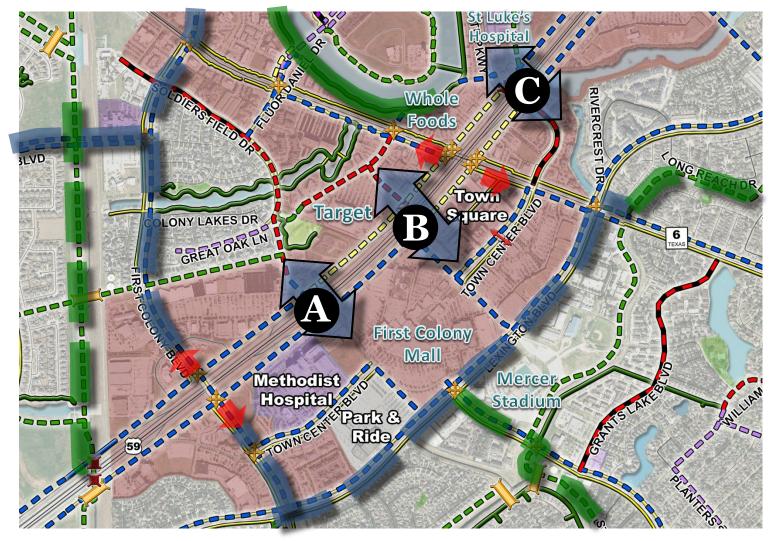
### POTENTIAL BARRIER SOLUTIONS







### **TOWN CENTER - US 59 CROSSING**







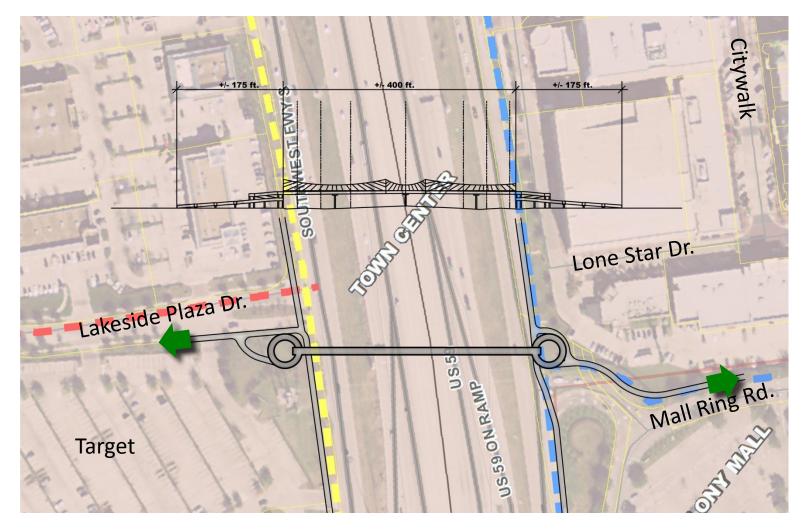
**EXAMPLE OF POTENTIAL BARRIER SOLUTION** 







### GRADE SEPARATED CROSSING- US 59







**GRADE** Oyster Creek Park **SEPARATED** CROSSING - SH 6 **Bridge Dimensions** STATE HW 6.S. Chimneystone **Bridge Location** 

PARK









Bicycle SP Sidepath



**Shared Use Path** (Trail)



### MAJOR SIDEPATH CROSSING- US 90A AT ULRICH







# HIGH PRIORITY RECOMMENDATIONS

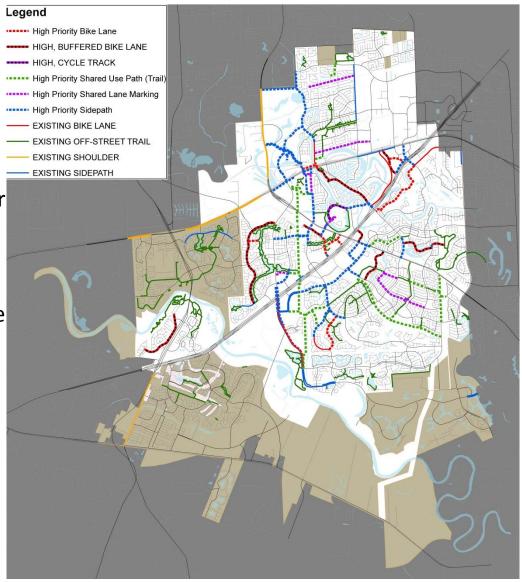




### High Priority Facilities

Upon completion of the High Priority Recommendations, Sugar Land will have:

- 27 miles of sidepaths
- 64 miles of shared use paths (trails)
- 9 miles of bike lanes
- 8 miles of buffered bike lanes
- 0.7 miles of cycle tracks
- 5 miles of shared lane markings







#### PROJECTED PLAN COSTS

(HIGH PRIORITY FACILITIES OVER THE NEXT TEN+ YEARS)

Facility	Length	Projected Cost Range
Sidepaths	18 miles +/-	\$11,000,000 to 12,500,000
Shared Use Paths (Trails)	12 miles +/-	\$8,000,000 to \$10,500,000
Bicycle Lanes	6 miles +/-	\$275,000 to \$300,000
Buffered Bike Lanes (includes one cycle track)	8 miles +/-	\$450,000 to \$550,000
Shared Lane Markings	5 miles +/-	\$75,000 to \$100,000





## Other Recommendations to Encourage Walking & Bicycle Riding in Sugar Land

- Work with school district to further encourage walking and riding to school on a school by school basis.
- Increase bicycle training for both children (through schools) and for adults.
- Increase the availability of bike racks at major destinations across the City.
- Consider incentivizing bike parking by offering reduction in vehicular parking requirements.
- Project to improve awareness/culture of bicycling, through signage (share the road, etc.) or other methods (consider passing a 3' minimum passing space requirement ordinance.
- Increased enforcement of bicycling infractions (stop sign/signal runners).





### **NEXT STEPS**

- Finalize draft document
- Final Workshops with Parks Board,
   P&Z, City Council
- City Council Adoption (end of summer)





### DISCUSSION AND COMMENTS



